



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,217	10/21/2003	George G. Barclay	51821	2341

7590 01/11/2005

EDWARDS & ANGELL, LLP
Dike, Bronstein, Roberts & Cushman,
IP Group
P.O. Box 9169
Boston, MA 02209

EXAMINER	
LEE, SIN J	

ART UNIT	PAPER NUMBER
1752	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,217

Applicant(s)

BARCLAY ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,9,10,12,15-17,20-22,30 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,9,10,12,15-17,20-22,30 and 37-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/07/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. In the preliminary amendment of June 21, 2004, applicants canceled claims 2-4, 6-8, 11, 13, 14, 18, 19, 23-29, 31-36, and 43-59.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 5, 9, 10, 12, 15-17, 20-22, 30, and 37-42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claim 1, applicants recite "a polymer that comprises Si atoms and silanol groups, where the polymer has a ratio of silanol groups to Si atoms of about 0.01 to 1.5." Applicants define "a silanol group" as a hydroxyl group that is directly (without any intervening atoms) covalently linked to a Si atom. However, none of working examples presented in present specification shows a polymer having such silanol group (i.e., a hydroxyl group that is directly covalently linked to a Si atom). Therefore, the Examiner does not understand how one can discuss the ratio of silanol groups to Si atoms in the present polymer.

Claim Rejections - 35 USC § 102

Art Unit: 1752

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

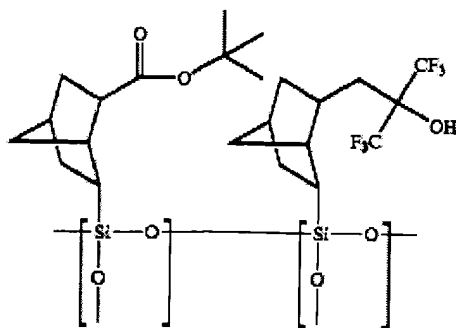
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5, 9, 10, 12, 15, 17, 21, 22, 30, 37-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Barclay et al (US 2003/0224286 A1)

The applied reference has a common inventor with the instant application.

Based upon the earlier effective U.S. filing date (*March 3, 2002*) of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In [0130], Barclay shows an example of his inventive siloxane polymer which has the following structure;



Applicants also make this polymer as shown in Example 1 of present specification, and in Example 1, applicants state that the number of silanol groups per silicon atom for the polymer is 0.2.

Barclay teaches a photoresist composition that contains his siloxane polymer and a photoactive component (see claim 1), and Barclay also teaches (see [0060]) that his photoactive component is preferably a photoacid generator. Therefore, Barclay teaches present inventions of claims 1, 5, and 17.

Since Barclay's polymer shown above has fluorinated alcohol group, the prior art also teaches present inventions of claims 9 and 10.

With respect to present claims 12 and 15, as shown in [0125], the first repeating unit and the second repeating unit of Barclay's polymer (which is shown above) are present in the amount of 50 mol% each. Therefore, the prior art teaches present inventions of claims 12 and 15.

Barclay teaches (see [0068]-[0070]) a positive-acting photoimageable composition containing his siloxane polymer and a photoacid generator as well as a negative acting photoimageable composition containing his polymer, a photoactive component, and crosslinking agents. Therefore, the prior art teaches present inventions of claims 21 and 22.


Barclay teaches (see [0088]-[0091]) that his photoimageable composition (containing his siloxane polymer and a photoactive component) is particularly suitable for use as a top layer in a bilayer photoresist system. A novolac polymer based resist, inert polyarylether-sulfone copolymer based resist, or a novolac or polyhydroxystyrene-


based thermally crosslinkable system can be used as a bottom layer. After such bottom layer is applied to a substrate, Barclay's photoimageable composition is coated on the cured bottom layer. Then, the photoimageable composition is imagewise exposed to radiation of wavelength of 248, 193, 157 nm or 11-15 nm. Following exposure, the top film layer is developed to form an etch pattern. Therefore, the prior art teaches present inventions of claims 30 and 37-42.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


S. Lee
February 8, 2005


Sin J. Lee
Patent Examiner
Technology Center 1700